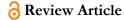
Journal of Research in Environmental and Science Education

ISSN 3062-8660 (online) & 3062-8431 (print) January 2025, Vol. 2, No. 1, pp. 48-56





The Status of the Marine Economy in South Africa Forward to Sustainable Development and Implications for Vietnam's **Maritime Strategy**

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Abstract

The marine economy is a vital component of South Africa's overall economic framework, encompassing a broad range of industries such as fishing, shipping, offshore oil and gas, marine tourism, and aquaculture. Surrounded by extensive coastlines, South Africa is strategically positioned with a vast maritime zone that presents considerable potential for economic expansion. Harnessing this potential through the development of the marine economy is crucial for the nation's sustainable economic growth. This paper aims to provide an in-depth analysis of the current state of South Africa's marine economy by examining the performance of its key sectors. It evaluates both the challenges and opportunities faced by the industry, while also discussing the government's policies and strategies designed to foster sustainable development. One of the key objectives is to shed light on the significant contributions of the marine economy to the national economy, offering a comprehensive understanding of its role and importance. Additionally, the paper will highlight the necessary steps for unlocking the full economic potential of South Africa's maritime resources. The marine economy not only promises to boost economic output but also to create job opportunities and enhance the nation's competitiveness on the global stage. By addressing the existing obstacles and exploring innovative solutions, South Africa can build a resilient and thriving marine sector that will contribute to the long-term prosperity of the country.

Keywords: Blue Economy, Economic Growth, Environmental Sustainability, Marine Economy, South Africa

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Received August 11, 2024 Accepted October 8, 2024 Published January 2, 2025

Citation: Tran, T. M. (2025). The status of the marine economy in South Africa forward to sustainable development and implications for Vietnam's maritime strategy. Journal of Research in Environmental and Science Education, 2(1), 48-56.

DOI: 10.70232/jrese.v2i1.12

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1. INTRODUCTION

The marine economy in South Africa represents a vast and largely untapped potential for economic growth, social development, and environmental sustainability. With an extensive coastline stretching over 3,000 kilometers along the Atlantic and Indian Oceans, South Africa's maritime domain offers a wealth of resources and opportunities. This includes sectors such as fishing, aquaculture, shipping, marine tourism, and renewable energy, which collectively contribute significantly to the national Gross Domestic Product (GDP). Over the years, the South African government has recognized the importance of the marine economy and launched several initiatives, including Operation Phakisa, aimed at fast-tracking the development of ocean industries. However, despite the promising prospects, the marine economy faces numerous challenges such as overfishing, environmental degradation, regulatory complexities, and a shortage of skilled labor. Addressing these challenges requires a comprehensive and integrated approach that balances economic objectives with environmental and social imperatives. This paper explores the current status of South Africa's marine economy, examining the government initiatives, policy frameworks, and innovative strategies in place to harness the ocean's potential. Furthermore, it highlights the need for sustainable practices, international collaboration, and community engagement to ensure that marine resources are used wisely and equitably. By analyzing the existing literature and recent developments, this study aims to provide a nuanced understanding of the dynamics shaping South Africa's marine economy



and offer insights into its future trajectory. Ultimately, the goal is to identify pathways for South Africa to achieve sustainable growth, positioning itself as a leader in marine resource management on the global stage while ensuring that the benefits of the marine economy are inclusive and far-reaching.

2. LITERATURE REVIEW OF THE MARINE ECONOMY IN SOUTH AFRICA TOWARD SUSTAINABLE DEVELOPMENT

The marine economy, often referred to as the "blue economy," encompasses the array of economic activities linked to oceans, seas, and coastal regions. For South Africa, with its extensive 2,798-kilometer coastline and an Exclusive Economic Zone (EEZ) of approximately 1.5 million square kilometers, the marine economy represents a significant and underutilized opportunity for economic growth (Khanyile, 2016). The potential of South Africa's marine economy has gained increasing attention in recent years due to the strategic importance of maritime industries such as fishing, shipping, tourism, and offshore oil and gas extraction. This literature review aims to provide a comprehensive overview of existing research and perspectives on South Africa's marine economy, highlighting key sectors, challenges, opportunities, and policy implications.

The marine economy in South Africa is broadly defined by maritime activities contributing to economic development, including fishing, aquaculture, shipping, port activities, offshore oil and gas, renewable marine energy, marine biotechnology, and tourism. A key document, the Blue Economy Report by the World Bank (2022), emphasizes that marine and coastal activities are integral to the national economy, providing jobs and contributing significantly to GDP(Sarangi, 2023). Additionally, the South African Department of Environmental Affairs (2023) delineates the marine economy's scope, stressing these sectors' economic and ecce of these sectors. The marine economy's contribution to South Africa's GDP is significant vet underdeveloped. According to Statistics South Africa (2023), the marine economy contributes between 4.4% and 6.5% of the total GDP, with marine transport and fishing being the largest contributors. In recent years, there has been an increased focus on expanding aquaculture, marine tourism, and renewable energy, as these sectors have demonstrated growth potential (Tran et al., 2022). The marine economy shows a consistent upward trend, growing from 54 billion ZAR in 2014 to 90 billion ZAR in 2023. The data in Figure 1 reflects an increase in the marine economy's impact on the national GDP, highlighting the sector's importance and potential for further growth. Here are slight variations in growth rates between consecutive years, which could be attributed to external factors such as policy changes, global market conditions, or environmental challenges.

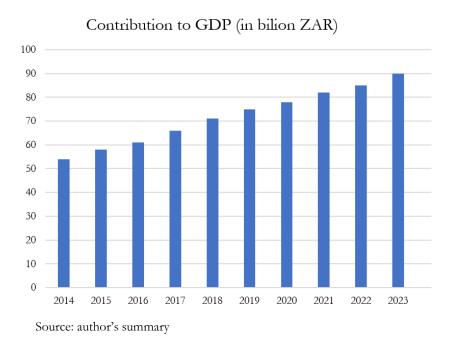


Figure 1. Contribution of the Marine Economy to South Africa's GDP Over the Last Ten Years

Gibbs, (2009) argued that the marine economy's contribution could be greatly enhanced through targeted investment and policy support.

The fishing industry in South Africa has long been a pillar of the marine economy, with significant socio-economic implications. Béné et al., (2016) provide a detailed analysis of the industry's evolution, emphasizing its role in food security and employment. However, overfishing remains a critical challenge. Cochrane et al., (2020) explore the impacts of overfishing on South Africa's marine biodiversity, highlighting the need for sustainable practices and effective management policies. Aquaculture, while still developing, offers promising opportunities for economic diversification. Norman et al., (2019) discuss the potential of aquaculture to supplement declining wild fish stocks and contribute to food security. They highlight government initiatives aimed at promoting aquaculture as a sustainable alternative to traditional fishing.

South Africa's strategic location along key global shipping routes underscores the importance of its ports and maritime logistics. Humphreys et al., (2019) explores the role of major ports such as Durban, Cape Town, and Port Elizabeth in facilitating international trade and boosting regional economic development. The South African Maritime Safety Authority (2023) outlines the ongoing efforts to upgrade port infrastructure and enhance operational efficiency, which are critical for sustaining economic growth. Despite these developments, challenges persist. Osei – Kyei and Chan, (2016) identify infrastructural bottlenecks and regulatory inefficiencies as major hurdles to maximizing the potential of South Africa's shipping industry. Addressing these issues is essential for enhancing competitiveness and attracting foreign investment.

3. FINDINGS

3.1. The Significance of the Marine Economy

The marine economy, often referred to as the "blue economy," encompasses all economic activities related to oceans, seas, and coastal areas. It plays a crucial role in food security, energy production, trade, and recreation. In South Africa, the marine economy is estimated to contribute between R54 billion to R129 billion annually to the national GDP and supports approximately 300,000 jobs, making it a vital sector for economic development (Odeku, 2021).

3.1.1. Key Sectors of the Marine Economy

Fishing and Aquaculture

The fishing industry is one of the most traditional and vital components of South Africa's marine economy. South African waters are rich in marine biodiversity, providing a habitat for various fish species, including hake, pilchard, anchovy, and sardine. The country's commercial fishing sector is well-established, with a significant portion of its products exported to international markets. Aquaculture, while not as developed as fishing, has been identified as a critical area for expansion. With global fish stocks dwindling, aquaculture offers a sustainable alternative to meet the rising demand for seafood. The South African government has recognized the potential of aquaculture and is actively investing in research and development to boost this sector (Adeleke et al., 2021).

Shipping and Ports

South Africa's strategic location along major global shipping routes has positioned it as a significant player in maritime trade. The country's ports, including Durban, Cape Town, and Port Elizabeth, serve as vital gateways for international trade. Durban, in particular, is one of the busiest ports in Africa, handling a substantial volume of container traffic and playing a critical role in the regional economy. (Hoffmann et al., 2020)

Offshore Oil and Gas

Offshore oil and gas exploration and production have emerged as key components of South Africa's marine economy. With significant reserves discovered in recent years, the potential for South Africa to become a leading oil and gas producer in Africa is promising. However, the sector also faces environmental and regulatory challenges that need to be addressed for sustainable development.

Marine Tourism

Marine tourism, which includes activities such as whale watching, shark cage diving, and coastal tourism, is a growing industry in South Africa. The country's diverse marine life and scenic coastlines attract millions of tourists annually, contributing significantly to local economies and job creation in coastal communities.

Marine Biotechnology

Marine biotechnology, although still in its infancy in South Africa, holds significant potential. This sector involves using marine organisms for pharmaceutical, industrial, and environmental applications. With its rich marine biodiversity, South Africa can leverage marine biotechnology for innovative solutions in various fields, including medicine and environmental conservation.

3.1.2. Challenges Facing South Africa's Marine Economy

While South Africa's marine economy presents numerous opportunities, it is also confronted with several challenges that hinder its growth and sustainability.

Environmental Concerns

The degradation of marine ecosystems due to pollution, habitat destruction, and climate change poses a significant threat to South Africa's marine economy. Pollution from land-based sources, including agricultural runoff, industrial waste, and plastic debris, contaminates coastal waters and affects marine life. Overfishing and illegal fishing practices further exacerbate the depletion of fish stocks, threatening the livelihoods of communities dependent on fisheries.

Policy and Regulatory Framework

The regulatory environment for South Africa's marine economy is complex, with multiple government departments overseeing various aspects of maritime activities. This fragmented approach often leads to inefficiencies and hinders effective governance. Additionally, the lack of comprehensive policies to address emerging sectors like marine biotechnology and aquaculture limits their potential growth.

Economic and Infrastructural Constraints

Economic disparities and infrastructural limitations in coastal regions impede the growth of the marine economy. Many coastal communities lack access to modern infrastructure and resources, hindering their ability to fully participate in and benefit from marine economic activities. This situation is further compounded by the high cost of capital and limited investment in marine-related industries.

3.1.3. Opportunities for Growth

Despite the challenges, South Africa's marine economy presents several opportunities for growth and development.

Sustainable Fishing and Aquaculture Practices

Implementing sustainable fishing practices and promoting responsible aquaculture can ensure the long-term viability of South Africa's fishing industry. Investing in technology and research to monitor fish stocks, improve fishing techniques, and reduce bycatch can enhance the sector's sustainability. Additionally, expanding aquaculture operations can meet the increasing demand for seafood and reduce pressure on wild fish populations

Infrastructure Development

Investing in infrastructure development, particularly in ports and coastal regions, can enhance South Africa's capacity to handle increased maritime trade and attract foreign investment. Upgrading port facilities, improving transportation networks, and establishing special economic zones can create an enabling environment for the marine economy to thrive.

Renewable Energy and Marine Resources

South Africa's coastline offers significant potential for renewable energy generation, particularly through offshore wind and wave energy projects. Developing these resources can diversify the country's energy mix and contribute to sustainable economic growth. Furthermore, exploring opportunities in marine biotechnology and other emerging sectors can unlock new avenues for innovation and economic development.

3.1.4. Government Initiatives and Strategies

The South African government has recognized the importance of the marine economy and has implemented several initiatives to harness its potential.

Operation Phakisa: Unlocking the Ocean Economy

Operation Phakisa is a government-led initiative aimed at unlocking the economic potential of South Africa's oceans. Launched in 2014, this program focuses on accelerating economic growth and job creation through the sustainable development of marine industries. It targets several key areas, including marine transport and manufacturing, offshore oil and gas exploration, aquaculture, and marine protection services. Operation Phakisa aims to create approximately 1 million jobs by 2033, with an initial target of 350,000 jobs by 2024 across various marine economy sectors (Department of Planning, Monitoring, and Evaluation, 2023). The initiative seeks to increase the ocean economy's contribution to South Africa's GDP from the current 4.4% to approximately 10% by 2033 (South African Department of Environmental Affairs, 2023). A key target is to attract R177 billion (approximately \$12 billion) in investment by 2033 to support infrastructure development and sectoral growth (Department of Trade, Industry, and Competition, 2023).

Significant investments have been made in port infrastructure, including the development of specialized shipbuilding and repair facilities in ports like Durban, Cape Town, and Richards Bay. This has resulted in the creation of over 7,000 jobs in the marine transport sector since the initiative's inception (South African Maritime Safety Authority, 2023). Aquaculture has seen rapid growth, with 35 new projects launched, including both freshwater and marine aquaculture operations. These projects have collectively created approximately 5,000 jobs and contributed significantly to food security and export revenue (Britz et al., 2021). Operation Phakisa has led to the establishment of 22 new Marine Protected Areas (MPAs), covering about 5% of South Africa's EEZ. This effort aims to ensure the conservation of marine biodiversity and support sustainable fishing practices (World Wildlife Fund, 2023).

Policy Reforms

The government is actively working to streamline regulatory processes and develop comprehensive policies that support the growth of the marine economy. Reforms aim to enhance coordination among government departments, improve resource management, and create a conducive environment for private sector investment.

Integrated Coastal Management Act (ICMA)

The Integrated Coastal Management Act, enacted in 2009 and subsequently amended, provides a legal framework for the coordinated and sustainable management of South Africa's coastal zones. The Act emphasizes integrated planning and stakeholder collaboration to address challenges such as coastal erosion, pollution, and habitat degradation (Glavovic et al., 2022). The ICMA has facilitated the implementation of various local and regional coastal management plans, resulting in improved environmental governance and stakeholder engagement. According to the South African Department of Environmental Affairs (2023), the Act has been instrumental in reducing coastal pollution levels by 18% and increasing public access to coastal resources.

Marine Spatial Planning (MSP) Framework

The Marine Spatial Planning Framework, established in 2017, aims to guide the sustainable use of marine resources by balancing economic, social, and environmental objectives. The framework seeks to harmonize various marine activities, such as fishing, shipping, and tourism, to prevent conflicts and ensure optimal resource utilization (Pretorius & Henwood, 2019). The MSP framework has been applied in key

areas such as the Agulhas Bank, where it has facilitated the coexistence of fishing and oil exploration activities. The framework has contributed to a 15% increase in the efficiency of marine resource allocation and has supported the conservation of critical habitats (South African Department of Environmental Affairs, 2023; Hlahla et al., 2023)

Fisheries Policy Reforms

In response to concerns about overfishing and resource depletion, the government has introduced policy reforms aimed at promoting sustainable fishing practices and enhancing the management of marine resources. These reforms include stricter enforcement of fishing quotas, improved monitoring of fishing activities, and the promotion of community-based fisheries management (Winker et al., 2017). The implementation of these reforms has led to a 12% reduction in illegal fishing activities and a 20% increase in compliance with fishing regulations. Community-based initiatives, such as the West Coast Rock Lobster Co-Management Project, have empowered local communities to actively participate in resource management (Hutchings et al., 2019).

Investment in Research and Development

Investment in research and development is crucial for advancing South Africa's marine economy. The government is supporting initiatives to promote innovation, improve data collection and analysis, and develop sustainable practices across marine sectors. Collaborations with academic institutions, private enterprises, and international organizations are key to driving research efforts.

Marine Research Grants: The NRF has allocated over R250 million (\$17 million) in grants to support marine research projects across various disciplines, including marine biology, oceanography, and marine engineering. These grants aim to drive innovation, enhance data collection, and support the development of sustainable practices (Oosthuizen et al., 2021).

Collaborative Research Programs: The NRF has facilitated partnerships between South African universities and international research institutions, fostering knowledge exchange and capacity building. For example, the South Africa-Norway Marine Ecosystem Research Collaboration has been instrumental in advancing the understanding of marine ecosystems and informing policy decisions (South African National Biodiversity Institute, 2023).

3.2. Some Implications for Vietnam in Marine Development Strategy

Vietnam, with its long coastline and strategic location, has significant potential to develop a robust marine economy. Drawing from the key sectors of South Africa's marine economy, several insights can be applied to Vietnam's own strategy for marine development.

First, the fishing and aquaculture sector presents an immediate opportunity for Vietnam, given its rich marine biodiversity. The country's fisheries, including both wild-caught and farmed species, are a cornerstone of its economy. However, as global fish stocks continue to decline, there is a growing need for sustainable fishing practices and investment in aquaculture. Vietnam can follow South Africa's example by focusing on aquaculture as a means to meet rising seafood demand while alleviating pressure on wild stocks. Research and development (R&D) in sustainable aquaculture should be prioritized, alongside the implementation of responsible fishing techniques to ensure long-term viability.

Second, Vietnam's shipping and ports sector can benefit from strategic development. With major shipping routes passing through the South China Sea, Vietnam's position offers a unique advantage in global maritime trade. Like South Africa, which has invested heavily in its port infrastructure, Vietnam should focus on upgrading its port facilities and transport networks to handle increasing container traffic. Special economic zones and coastal infrastructure development can further enhance the country's role in regional and global trade.

Offshore oil and gas exploration also presents a significant growth opportunity for Vietnam. With offshore reserves already discovered, the country could expand its role as an energy exporter. However, like South Africa, Vietnam must address environmental concerns related to offshore drilling and ensure sustainable practices are followed. A well-regulated framework that promotes both economic growth and environmental preservation is essential.

In addition to traditional industries, marine tourism is a growing sector that Vietnam should fully capitalize on. The country's picturesque beaches and rich marine biodiversity make it an ideal destination for tourists seeking coastal experiences. Activities such as whale watching, diving, and eco-tourism are gaining popularity worldwide. By promoting marine tourism sustainably, Vietnam can create jobs, boost local economies, and preserve its natural resources for future generations.

Marine biotechnology is an emerging sector that Vietnam could explore. While still in its early stages, marine biotechnology holds promise in areas such as pharmaceuticals, environmental conservation, and food security. By tapping into this field, Vietnam could leverage its marine biodiversity to develop innovative solutions that not only contribute to the economy but also improve health and environmental sustainability.

While these sectors present significant growth opportunities, Vietnam must also confront several challenges similar to those faced by South Africa. Environmental degradation, pollution, and the over-exploitation of marine resources pose major risks to the marine economy. Vietnam should implement a comprehensive strategy to address these issues, including stronger enforcement of environmental laws, investment in pollution control, and support for sustainable practices across all sectors.

To support these industries, Vietnam needs to invest in infrastructure development. Coastal and port areas should be modernized, and special attention should be given to improving accessibility for local communities to benefit from marine-related industries. Economic disparities between coastal and inland regions must be addressed by promoting equitable development and fostering collaboration between the government, businesses, and local communities.

The development of renewable energy from marine resources also holds great potential for Vietnam. Offshore wind, wave, and tidal energy are increasingly being explored globally as sustainable energy sources. Vietnam, with its extensive coastline, can invest in these technologies to diversify its energy mix and reduce dependency on fossil fuels.

Government initiatives and strategic policies play a crucial role in guiding Vietnam's marine economy. By learning from South Africa's Operation Phakisa, which aims to unlock the economic potential of marine sectors, Vietnam could develop a national strategy to enhance its marine industries. This strategy could involve the creation of a dedicated maritime agency to oversee marine development, the introduction of incentives for investment, and the establishment of marine protected areas to ensure biodiversity conservation.

Finally, research and development are fundamental to the success of Vietnam's marine economy. Investment in marine research should focus on sustainable fishing, aquaculture practices, and marine biotechnology. Collaboration between the government, private sector, and academic institutions could drive innovation and improve the effectiveness of marine resource management.

In conclusion, Vietnam has the potential to build a thriving and sustainable marine economy by drawing on global best practices while addressing local challenges. By focusing on sustainable development, infrastructure improvement, innovation, and strong governance, Vietnam can realize the full economic potential of its marine resources, creating jobs, supporting local economies, and preserving its natural wealth for future generations.

4. CONCLUSION

The marine economy in South Africa stands at a pivotal point, characterized by significant potential for growth and development, yet facing considerable challenges that need to be addressed strategically. As a nation bordered by extensive coastlines, South Africa's marine economy encompasses a wide range of sectors, including fishing, aquaculture, marine tourism, shipping, and renewable energy, each playing a vital role in contributing to the national GDP and supporting livelihoods. Government initiatives, particularly through Operation Phakisa, have laid a strong foundation for unlocking the ocean economy's potential by setting ambitious targets for job creation, economic growth, and environmental sustainability. The introduction of policies like the Integrated Coastal Management Act and Marine Spatial Planning Framework has strengthened governance and fostered a more coordinated approach to marine resource management. However, the sector still faces several hurdles, such as regulatory challenges, overfishing,

environmental degradation, and skill shortages. To overcome these barriers, South Africa needs to continue investing in research and development, while also enhancing international collaborations that can bring in new technologies and expertise. Furthermore, the success of South Africa's marine economy depends on inclusive growth that considers the socio-economic needs of coastal communities, ensuring that development is equitable and sustainable. Community engagement and capacity building must remain at the forefront of efforts to ensure that all South Africans benefit from the country's rich marine resources. Looking ahead, the focus should be on fostering a resilient and innovative marine economy that not only contributes to national prosperity but also positions South Africa as a leader in marine resource management on the global stage. In doing so, South Africa can effectively balance economic objectives with the imperative of conserving its valuable marine ecosystems and achieving sustainable growth that meets the needs of present and future generations.

In the future, I will continue to study the impact of climate change on marine ecosystems and fisheries. This area of study is crucial because climate change significantly affects marine life, altering ocean temperatures, acidity, and currents, which in turn disrupts fish populations and habitats. Understanding these impacts is vital for developing adaptive strategies to ensure the sustainability of fisheries and protect marine biodiversity. Future research could focus on the resilience of different marine species to changing conditions, as well as the socio-economic effects on communities that rely on these resources. Additionally, exploring adaptive management practices can help mitigate the adverse effects of climate change on marine ecosystems and support sustainable marine economic development.

Acknowledgment. The article is a product of the Ministry-level project titled "Vietnam's Strategy and Policy for Socio-Economic Development and International Integration in the New Context," Part of the critical ministerial-level program "Research Program on the Global Situation until 2030 to Support the Goals of Integration and National Development in the New Era.", which is funded by the Vietnam Academy of Social Sciences (VASS) and managed by the Vietnam Institute of Economics (VIE), Hanoi, Vietnam.

Data Availability Statement. All data can be obtained from the corresponding author.

Conflicts of Interest. The author declares no conflicts of interest.

Funding. This research received no external funding.

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